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(54) Title: IDENTIFICATION MARK COMPRISING AN OPTICALLY AND ELECTRONICALLY READABLE MARKING

(57) Abstract

Authenticity/security identification mark consisting of an optical marking and an (acoustic/electro)magnetic marking. The optical marking can comprise a hologram. Said two identification marks are produced as a single entity during the production in a number of immediately successive steps. During this process a layer of soft magnetic material is provided with an additional layer of metal which contains the hologram.

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Identification mark comprising an optically and electronically readable marking

The present invention relates to an identification mark according to the precharacterising clause of Claim 1.

5 An identification mark of this type is disclosed in European Patent Application 0 673 853. This publication describes a security marking. A security marking is a marking which reacts to an acoustic, electrical or (electro)magnetic signal which if it is not deactivated, for example taken past an antenna in a shop without being paid for, can cause a signal to be triggered. A security marking of this type is provided with screening that can be deactivated. If it is handled correctly, that is to say deactivated, the effect of the soft magnetic layer used in the security marking can be negated by deactivating it. The optical marking described in European Application 0 673 853 comprises a hologram. Purchasers can see from this hologram whether a product is a genuine brand product or an imitation. According to what is described in the said European Application, the hologram is fixed to 10 the authenticity marking by means of an adhesive. This joining technique, that is to say the use of adhesive, is relatively complex in the case of large-scale production and increases the cost price, but, on the other hand is attractive to imitators. After all, ever increasing numbers of forged holograms are coming onto the market, whilst authenticity markings are likewise being forged.

15 The aim of the present invention is to provide an improved identification mark which, on the one hand, is less expensive and can be produced more accurately in large runs but, on the other hand, is more difficult to copy.

This aim is achieved with an identification mark as described above by the characterising measures according to Claim 1. According to the invention, the hologram 20 or other optical marking is joined to the (acoustic/electro)magnetic marking during the production process itself. By this means an efficient and accurate production process can be provided whilst copying is made more difficult. After all, the identification mark obtained according to the invention no longer consists of the simple combination of a hologram and authenticity marking. In contrast to the European Application 0 673 853 25 described above, there is no adhesive layer between the hologram component and the (acoustic/electro)magnetic component.

It is possible to deposit the additional metallic layer described in Claim 1 directly on the soft magnetic layer. According to another embodiment, it is possible to insert an

intermediate layer, such as a carrier layer consisting of PET, OPP or PVC. The same applies with regard to the optical marking. The latter can either be incorporated directly in the additional metallic layer, but also in a coating applied thereon. The optical marking is preferably a hologram. Holograms are also understood to include kinograms, pixelgrams, 5 kineforms and the like. These can be either two-dimensional or three-dimensional. Holograms are also understood to include 'Optical Variable Devices' ('OVD'), that is to say devices which are optically readable, for example with the aid of a scanner. Pixel comparison is likewise possible. A hologram can be applied in any way known in the state of the art. Embossing is one possibility and this is used in particular if the hologram is 10 applied in the additional metallic layer. This additional metallic layer can comprise any material known in the art and according to a preferred embodiment consists of aluminium.

The (acoustic/electro)magnetic marking described above can be either an authenticity marking or a security marking. The hologram described above is an authenticity marking. The combination described above of a soft magnetic layer and a 15 (hard) magnetic layer that can be deactivated is a security marking. However, it is possible for the marking according to the invention to be implemented solely as an authenticity marking, that is to say for only a soft magnetic layer to be present which cannot be deactivated in any way whatsoever. So as not to trip existing security devices in such a case, it can be necessary to reduce the effectiveness of such a soft magnetic layer, for 20 example by reducing the thickness thereof. Whereas in the prior art and in the invention the layer thickness of a soft magnetic layer for a security marking is approximately 1 µm, when said marking is used as an authenticity marking said layer thickness will be considerably less than 1 µm and in a preferred embodiment less than 0.5 µm. With the aid of such an (electro)magnetic authenticity marking it is possible to detect markings which 25 are inside packaging, that is to say in situations where the hologram is not visible, with the aid of relatively simple equipment. Moreover, it is possible to give different products different (electro)magnetic characteristics which are characteristic of the products concerned. For instance, the composition of the soft magnetic layer can consist of various quantities and combinations of soft ferrous and non-ferrous metals, such as copper, cobalt, 30 silver and gold. Likewise, a difference in relief, coarser or finer, in the metallic layer and/or the magnetic layer can be produced by using different embossing (hologram, etc.), by means of which the nature of the (electro)magnetic signal is influenced.

By means of different combinations it is possible to recognise and distinguish

different types of products. It is possible to recognise different products from a distance of, for example, 5 cm using relatively simple equipment.

As indicated above, the identification mark can be implemented either as a security marking or as an authenticity marking. It is possible to attach the identification mark according to the invention to packaging, but also to attach it to documents to guarantee the authenticity thereof. The fixing technique can be any technique known in the state of the art, such as sticking. According to an advantageous embodiment of the invention, said fixing technique also comprises the hot stamp technique. With the latter technique fusion takes place between the material to which the identification mark has been applied and that layer of the identification mark which adjoins said material. As a result it is not possible to remove the identification mark without damaging the packaging and/or document concerned. This offers appreciable security.

It will be understood that the abovementioned layers of the identification mark are only those layers which are essential to the invention. Depending on the application and the production method, numerous further layers can be present, as will also be seen from the illustrative embodiments described with reference to the drawings.

The deposition technique described above for the additional metallic layer, such as an aluminium layer, can comprise any deposition technique known in the state of the art. In this context consideration is given to the vacuum deposition technique, but also to sputtering techniques.

It is possible to make the identification mark according to the invention in any shape. For instance, for use on a compact disc the identification mark could be produced in the form of a ring which extends around the central opening. This ring can then be applied either with the aid of an adhesive auxiliary layer or by using the hot stamp technique described above. In the case of use on a compact disc, the identification mark can be either an authenticity marking or a security marking.

The present invention also relates to a method for the production of the identification mark described above. With this method the optical marking and the (acoustic/electro)magnetic marking are produced in an unbroken sequence of steps as a single identification mark. That is to say, preferably, after provision of a layer of material having soft magnetic properties, a further metallic layer is applied thereon with the aid of a deposition technique, in which further layer the hologram is then produced. As indicated above, an auxiliary layer, for example composed of plastic material, can have been applied

between the soft magnetic layer and the additional layer, which preferably consists of aluminium. Moreover, the additional layer can have been provided with a (plastic) coating in which the hologram is then produced. That is to say, in contrast to the prior art, it is not the case that, on the one hand, an (acoustic/electro)magnetic marking and optical marking are provided in two completely separate steps and these two layers are then joined to one another in a third step, but the hologram or any other optical identification mark is produced in a step integrated in the process in a layer which has already been joined to the soft magnetic layer.

The invention will be explained in more detail below with reference to illustrative embodiments shown in the drawings. The drawings all refer to an authenticity marking, but it must be understood that the invention also extends to the field of security markings. In the drawings:

Fig. 1 shows, in cross-section, one embodiment of the authenticity identification mark according to the invention;

Fig. 2 shows a variant of the construction shown in Fig. 1, shown as hot stamping film for hot stamping;

Fig. 3 shows the construction according to Fig. 2 after hot stamping;

Fig. 4 shows a further film layer that can be processed by the hot stamp technique;

Fig. 5 shows laminate using the hot stamp technique, and

Fig. 6 shows a further construction in which a paper layer is used as support.

The authenticity marking according to the invention is indicated in its entirety by 1. The end edges have been shown broken away to indicate that component 1 can have any imaginable shape. This authenticity marking according to the invention consists of a component 2 that has been produced as a hologram or optical authenticity marking and a component 3 in which a magnetisable layer is located. A hologram, as described above, or optical security marking is described in Netherlands Patent Application 9001616. In the embodiment according to Fig. 1, component 2 consists, from the outside to the inside, of a transparent varnish layer 10, a coating 4 with holographic information incorporated therein, in contact with which there is an aluminium layer 5 which has been produced by vapour deposition on carrier layer 6, which in this embodiment comprises a PET layer. A magnetisable layer, such as an Atalante[®] layer 7, which is provided with an adhesive layer 8 for fixing to the article concerned, adjoins this PET layer.

It is possible to produce authenticity marking 1 in any way imaginable in the state of

the art. One possibility is to first produce component 3, after which aluminium layer 5 is vapour-deposited on the PET layer 6, the layers 4 and 10 then being applied.

The various layers can have thicknesses which are suitable for the associated function.

5 For instance, layer 7 can have a thickness of between 0.1 and 0.5 µm and more particularly 0.1 - 0.5 µm. Layer 4 can have a thickness of approximately 1.0 µm. A thickness of approximately 23 µm may be mentioned for layer 6.

Instead of attaching layer 6 by adhesive, other joining techniques, such as laminating and the like, are also possible.

10 It will be understood that there are equivalents for the various layers. For instance, layer 6 can be replaced by a (biaxially orientated) polypropylene or PVC layer.

Those skilled in the art will also understand that component 3 can be replaced by a component reacting to a radio frequency field or by a component reacting to an acoustic-magnetic or electromagnetic field. Adhesion to the authenticity marking 2 will be 15 achieved depending on the component concerned.

Fig. 2 shows a film that can be processed by the hot stamp technique and is indicated in its entirety by 11. This film consists of a polyester layer 12, a release layer 13, a varnish layer 14 in which a hologram has been produced with the aid of a relief technique, an aluminium layer 15 applied using a vacuum technique, an additional soft magnetic aluminium layer 16 of relatively small thickness, applied by a sputtering technique, an adhesive layer 17 and a cover layer protecting said adhesive layer.

Fig. 3 shows the film 11 after the use of heat and pressure (hot stamp technique). Moreover, the layers 12 and 13 have been removed and the film 11 has been applied to a substrate by removing cover layer 18 and applying a substrate 19.

25 Fig. 4 shows a further variant in which the film layer is indicated in its entirety by 21. The polyester layer is indicated by 22 and the underlying release layer by 23. In contrast to the embodiment according to Fig. 2, the hologram is applied in the aluminium layer indicated by 25, which aluminium layer has been deposited by a vacuum technique, the hologram facing layer 24 having a relatively small thickness (for example 2 Å).
30 Beneath layer 25 there is once again an additional sputtered soft magnetic layer 26, a layer of adhesive 27 and a cover layer 28. Fig. 5 shows how a film 21 is placed between two components of a credit card, which are indicated by 29 and 30. The film is indicated in its entirety by 31 and consists of a hot-melt adhesive layer 32, a relatively thick deposited

aluminium layer 33, into which a hologram has been introduced, and a further soft magnetic layer 34, applied by sputtering, and an adhesive layer 35.

In Fig. 6 a variant of the invention is indicated in its entirety by 41. This variant is protected by a paper support layer 42 onto which an adhesive 43 has been applied. A 5 polyester layer is indicated by 44, on which polyester layer a release layer 45 has been applied. 46 indicates a soft magnetic layer applied with the aid of a sputtering technique. An aluminium metallic layer 47, a varnish layer 48 and a layer 49 containing a hologram have then been applied. An aluminium metallised layer 50 and a sealing layer 51 then follow. The sealing layer 51 can comprise a wax covering.

10 Several of the layers shown in Fig. 6 can be dispensed with or replaced by other layers. For instance, it is possible to apply the hologram in a varnish layer, such as a UV varnish layer. It will be understood that numerous variants are possible which fall within the scope of the present invention but always result in the combination of a hologram with an electronic authenticity marking.

15 Furthermore, it is possible to combine the authenticity marking according to the invention with, for example, a barcode. Such a barcode can be present on the film layer and can be applied, for example, using very fine etching techniques.

It will be clear to those skilled in the art that many variants are possible and that the fields of application are likewise diverse. These various aspects fall within the scope of the 20 appended claims.

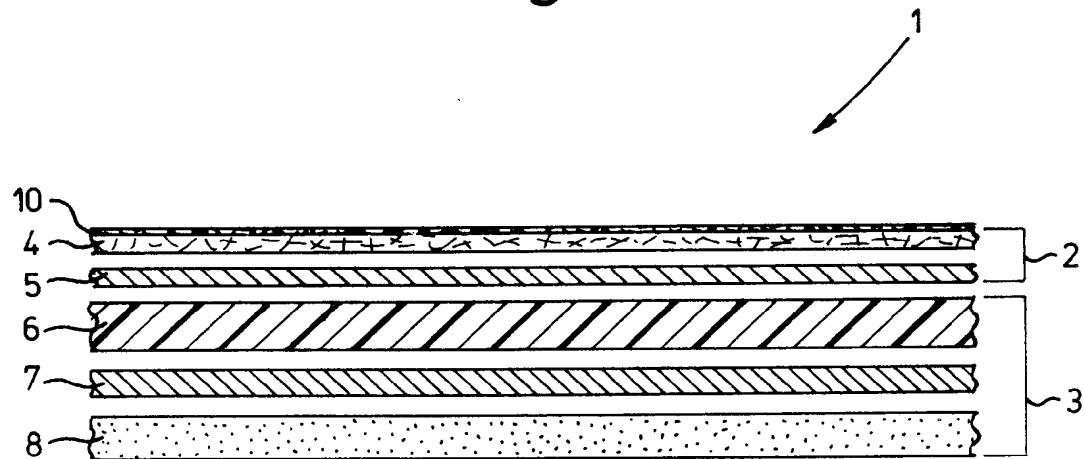
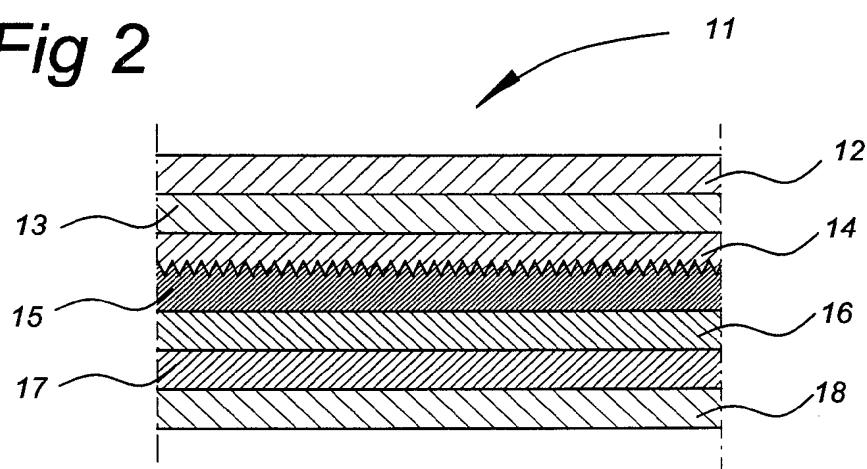
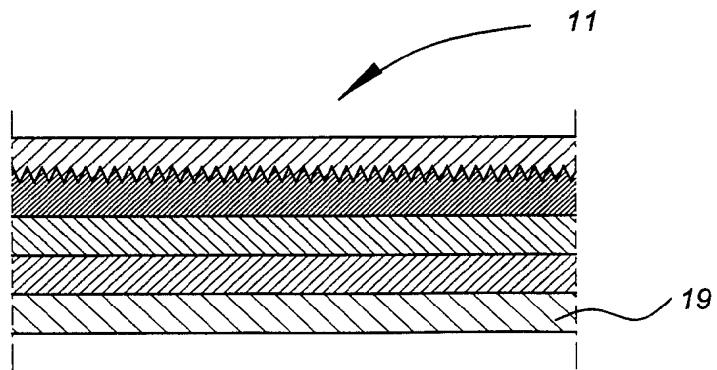
Claims

1. Identification mark, comprising an optically and an electronically readable marking, which markings are conjoined, the electronic marking comprising an (acoustic/electro)magnetic marking, having a soft magnetic layer, and the optical marking comprising a structure provided with a relief, characterised in that an additional metallic layer has been deposited on said soft magnetic layer, which additional metallic layer contains the optically readable marking.
2. Identification mark according to Claim 1, wherein an auxiliary layer has been applied between said soft magnetic layer and said deposited metallic layer.
3. Identification mark according to one of the preceding claims, wherein said additional metallic layer comprises a coating in which a hologram has been produced.
4. Identification mark according to Claim 1 or 2, wherein a hologram has been embossed in said additional metallic layer.
5. Identification mark according to one of the preceding claims, comprising a security marking having a magnetically deactivatable layer.
6. Identification mark according to one of Claims 1 - 4, comprising an authenticity marking, wherein said soft magnetic layer is permanently in contact with the environment without magnetic screening.
7. Identification mark according to Claim 6, wherein said soft magnetic layer has a thickness of less than 1 µm.
8. Identification mark according to one of the preceding claims, wherein said deposited layer is an aluminium layer.
9. Identification mark according to one of the preceding claims, wherein said soft magnetic layer comprises cobalt.
10. Product, such as packaging or a document, comprising the identification mark according to one of the preceding claims, characterised in that said identification mark has been attached to said product by the hot stamp technique.
11. Method for the production of an identification mark, comprising the production of an (acoustic/electro)magnetic marking, a soft magnetic layer being provided, and the joining of an optical marking thereto, which optical marking comprises a relief produced in a layer, characterised in that said layer in which said relief is produced is joined to said soft magnetic layer.

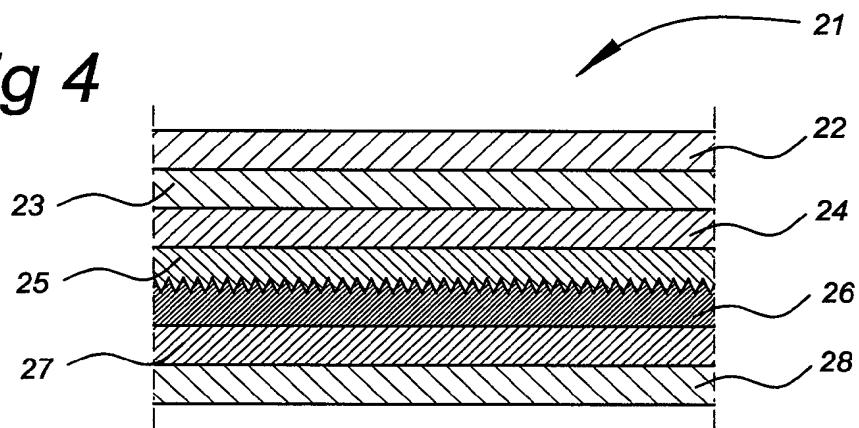
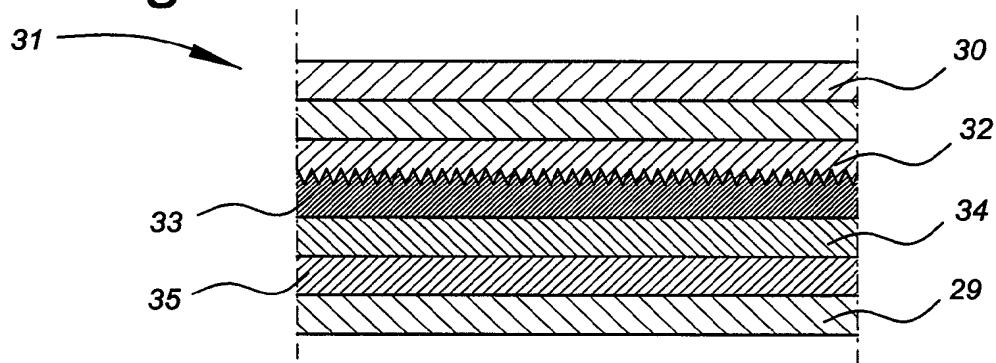
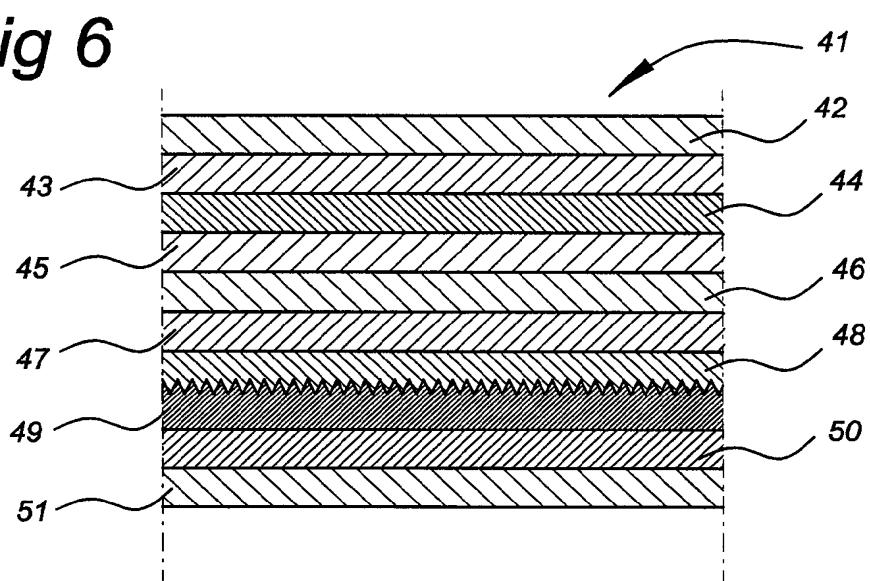
12. Method according to Claim 11, characterised in that said layer in which said relief is produced is first joined to said soft magnetic layer, after which the optical marking is produced in said layer.

13. Method according to Claim 11 or 12, wherein an additional metallic layer is
5 deposited on said soft magnetic layer, the optical marking being produced in said additional metallic layer.

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Fig 1*Fig 2**Fig 3*

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Fig 4*Fig 5**Fig 6*

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 99/00123

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G08B13/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G08B B65D B65C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 673 853 A (ESSELTE METO INT GMBH) 27 September 1995 cited in the application see column 5, line 19 - line 53 ----	1-11
A	DE 43 23 883 A (ESSELTE METO INT GMBH) 19 January 1995 see the whole document ----	1-11
A	FR 2 704 964 A (DIET JEAN PAUL) 10 November 1994 see the whole document ----	1-11
A	EP 0 408 896 A (LANDIS & GYR BETRIEBS AG) 23 January 1991 see abstract -----	10



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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